MR2493-38

IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Clifton W. Bingham	:	Group
Serial No:	10/759,023	:	Art Unit # 2121
Filed:	20 January 2004	:	Examiner:
Title:	METHOD FOR IDENTIFYING ANTICIPATED CHANGES IN MULTI-DIMENSIONAL DATA SETS	:	Unknown

INFORMATION DISCLOSURE STATEMENT

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The Applicant wishes to make the following art references of record in the above-identified Patent Application pursuant to 37 C.F.R. §§ 1.97 and 1.98, and to the Duty of Disclosure set forth in 37 C.F.R. § 1.56

Although the information submitted herewith may be "material" to the Examiner's consideration of the subject Patent Application, this submission is not intended to constitute an admission that such information is "prior art" as to the claimed invention.

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search was made or that no other material information, as defined in 37 C.F.R. § 1,56(b), exists.

I. **The cited Patent references are:**

Ref. No.	Patent No.	Issue Date	Inventor(s)
A	5,210,798	05/11/1993	Ekchain et al.
B	5,214,744	05/25/1993	Schweizer et al.
C	5,337,370	08/09/1994	Gilles et al.
D	5,465,308	11/07/1995	Hutcheson et al.
E	5,640,468	06/17/1997	Hsu
F	5,680,481	10/21/1997	Prasad et al.
G	5,751,844	05/12/1998	Bolin et al.
H	5,761,383	06/02/1998	Engel et al.
I	5,845,048	12/01/1998	Masumoto
J	5,867,386	02/02/1999	Hoffberg et al.
K	5,884,296	03/16/1999	Nakamura et al.
L	6,035,057	03/07/2000	Hoffman
M	6,038,337	03/14/2000	Lawrence et al.
N	6,055,491	04/25/2000	Biliris et al.
O	6,075,884	06/13/2000	Lubin et al.
P	6,104,835	08/15/2000	Han
Q	6,112,195	08/29/2000	Burges
R	6,122,399	09/19/2000	Moed
S	6,134,344	10/17/2000	Burges

T	6,175,644	01/16/2001	Scola et al.
U	6,226,408	05/01/2001	Sirosh
V	6,240,206	05/29/2001	Tokuyama
W	6,278,799	08/21/2001	Hoffman
X	6,301,370	10/09/2001	Steffens et al.
Y	6,324,347	11/27/2001	Bacs, Jr. et al.

II. **The cited other art references are:**

Reference No.	Description
A1	S. Fahlman, "Fast-learning variations on back-propagation: An empirical study," in Proceedings of the 1988 Connectionist Models Summer School, 1988, pp. 38-51
B1	M. Bao, "Backscattering change detection in SAR images using wavelet techniques," in Proceedings of the 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'99), June 28-July 2, 1999, pp. 1561-1563.
C1	L. Bruzzone, et al. "A Bayesian approach to automatic change detection," in Proceedings of the 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'99), June 28-July 2, 1999, pp. 1816-1818.

D1 Lorenzo Bruzzone, "Automatic analysis of the difference image for unsupervised change detection," IEEE Transactions on Geoscience and Remote Sensing, Vol. 38, No. 3, pp. 1171-1182, May 2000.

E1 M. J. Carlotto, "Detection and analysis of change in remotely-sensed imagery with application to wide area surveillance," IEEE Transactions on Image Processing, Vol. 6, No. 1, Jan. 1997.

F1 C. Canus, et al. "Change detection in sequences of images by multifractal analysis," in Proceedings of the 1996 IEEE International Conference of Acoustics, Speech and Signal Processing (ICASSP-96), Vol. 4, May 7-10, 1996, pp. 2172-2175.

G1 P. J. Deer, "Digital change detection techniques: Civilian and military applications," in ISSSR-95, 1995 [online]. Available; http://ltpwww.gsfc.nasa.gov/ISSSR-95/digitalc.htm

H1 X. Dai, et al. "Development of a new automated land cover change detection system from remotely sensed imagery based on artifical neural networks," in Proceedings of the 1997 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'97), Vol. 2, Singapore, Aug. 3-8 1997, pp. 1029-1031.

I1 X. Dia, "Effects of image misregistration on the accuracy of remotely sensed change detection," IEEE Transactions of Geoscience and Remote Sensing, Vol. 36, No. 5, pp. 1566-1577, Sep. 1998.

J1 X. Dia, "Requirements and techniques for an automated change detection system," in Proceedings of the 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'98), Vol. 5, July 6-10 1998, pp. 2752-2754.

K1 X. Dia, et al. "Automated image registration for change detection from Landsat thematic mapper imagery," Proceedings of the 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'96), Vol. 3, May 27-31 1996, pp. 1609-1611.

L1 S. Gopal, et al. "Remote sensing of forest change using artificial neural networks," IEEE Transactions of Geoscience and Remote Sensing, Vol. 34, No. 2, pp. 398-404, Mar. 1996.

M1 H. Hanaizumi, et al. "Change detection from remotely sensed multi-temporal images using multiple regression," in Proceedings of the 1992 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'92), May 26-29 1992, pp. 564-566.

N1 R. L. Lillestrand, "Techniques for Change detection," IEEE Transactions on Computers, Vol. 21, No. 7, pp. 654-659, July 1972.

O1 J. T. Morisette, et al. "An introduction of using generalized linear models to enhance satellite-based change detection," in Proceedings of the 1997 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'97), Vol. 4, Singapore, Aug. 3-8, 1997, pp. 1769-1771.

P1 I. Niemeyer, et al. "Unsupervised change detection techniques using multispectral satellite images," in Proceedings of the 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'99), June 28-July 2, 1999, pp. 327-329.

Q1 V. K. Shettigara, "A generalized procedure for change detection and semi-automatic extraction of man-made objects from multispectral images," in ISSSR-95 [Online]. Available: http://ltpwww.gsfc.nasa.gov/ISSSR-95/ageneral.htm

R1 D. J. Wehdahl, "Change detection in SAR images," in Proceedings of the 1991 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'91), June 3-6 1991, pp. 1421-1424.

S1 R. G. White, et al. "Change detection in SAR imagery," in Proceedings of the 1990 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'90), May 7-9 1990, pp. 217-222.

T1 T. Yamamoto, et al. "A change detection method for remotely sensed multi-spectral and multi-temporal images using 3-D segmentation," in Proceedings of the 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'99), June 28-July 2, 1999, pp. 77-79.

This Information Disclosure Statement is being filed more than three months subsequent to the filing date of the subject Patent Application, but before the mailing of a first Office Action.

A Form PTO-1449 and copies of the references are submitted along with this document. It is requested that the Examiner consider the references and make them of record in the above-referenced Patent Application.

Respectfully submitted,
FOR: ROSENBERG, KLEIN & LEE

David I. Klein
Registration No. 33,253

Dated: 11 May 2004

Suite 101
3458 Ellicott Center Drive
Ellicott City, MD 21043
(410) 465-6678

PTO/SB/08A (04-03)
Approved for use through 04/30/2003. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 4

Complete if Known	
Application Number	10/759,023
Filing Date	01/20/2004
First Named Inventor	Clifton W. Bingham
Art Unit	2121
Examiner Name	
Attorney Docket Number	MR1735-62

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A	US- 5,210,798	05/11/1993	Ekchain et al.	
	B	US- 5,214,744	05/25/1993	Schweizer et al.	
	C	US- 5,337,370	08/09/1994	Gilles et al.	
	D	US- 5,465,308	11/07/1995	Hutcheson et al.	
	E	US- 5,640,468	06/17/1997	Hsu	
	F	US- 5,680,481	10/21/1997	Prasad et al.	
	G	US- 5,751,844	05/12/1998	Bolin et al.	
	H	US- 5,761,383	06/02/1998	Engel et al.	
	I	US- 5,845,048	12/01/1998	Masumoto	
	J	US- 5,867,386	02/02/1999	Hoffberg er at.	
	K	US- 5,884,296	03/16/1999	Nakamura et al.	
	L	US- 6,035,057	03/07/2000	Hoffman	
	M	US- 6,038,337	03/14/2000	Lawrence et al.	
	N	US- 6,055,491	04/25/2000	Biliris et al.	
	O	US- 6,075,884	06/13/2000	Lubin et al.	
	P	US- 6,104,835	08/15/2000	Han	
	Q	US- 6,112,195	08/29/2000	Burges	
	R	US- 6,122,399	09/19/2000	Moed	
	S	US- 6,134,344	10/17/2000	Burges	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08A (04-03)
Approved for use through 04/30/2003. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 4

Complete if Known	
Application Number	10/759,023
Filing Date	01/20/2004
First Named Inventor	Clifton W. Bingham
Art Unit	2121
Examiner Name	
Attorney Docket Number	MR1735-62

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	T	US- 6,175,644	01/16/2001	Scola er al.	
	U	US- 6,226,408	05/01/2001	Sirosh	
	V	US- 6,240,206	05/29/2001	Tokuyama	
	W	US- 6,278,799	08/21/2001	Hoffman	
	X	US- 6,301,370	10/09/2001	Steffens et al.	
	Y	US- 6,324,347	11/27/2001	Bacs, Jr. et al.	
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, Washington, DC 20231.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08B (04-03)
Approved for use through 04/30/2003. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 3 of 4

Complete if Known	
Application Number	10/759,023
Filing Date	01/20/2004
First Named Inventor	Clifton W. Bingham
Art Unit	2121
Examiner Name	
Attorney Docket Number	MR1735-62

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	A1	S. Fahlman, "Fast-learning variations on back-propagation: An empirical study," in "Proceedings of the 1988 Connectionist Models Summer School", 1988, pp. 38-51.	
	B1	M. Bao, "Backscattering change detection in SAR images using wavelet techniques," in "Proceedings of the 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'99)," June 28 - July 2 1999, pp. 1561-1563.	
	C1	L. Bruzzone, et al. "A bayesian approach to automatic change detection," in "Proceedings of the 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'99)," June 28 - July 2 1999, pp. 1816-1818.	
	D1	Lorenzo Bruzzone, "Automatic analysis of the difference image for unsupervised change detection," "IEEE Transactions on Geoscience and Remote Sensing," vol. 38, no. 3, pp. 1171-1182, May 2000.	
	E1	M.J. Carlotto, "Detection and analysis of change in remotely -sensed imagery with application to wide area surveillance," "IEEE Transactions on Image Processing," vol. 6, no.1, Jan. 1997.	
	F1	C. Canus, et al. "Change detection in sequences of images by multifractal analysis," in "Proceedings of the 1996 IEEE International Conference of Acoustics, Speech, and Signal Processing (ICASSP-96)," vol. 4, May 7-10 1996, pp. 2172-2175.	
	G1	P. J. Deer, "Digital change detection techniques: Civilian and military applications," in "ISSSR-95", 1995. [Online]. Available; http://ltpwww.gsfc.nasa.gov/ISSSR-95/digitalc.htm	
	H1	X.Dai, et al. "Development of a new automated land cover change detection system from remotely sensed imagery based on artificial neural networks," in "Proceedings of the 1997 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'97)," vol. 2, Singapore, Aug. 3-8 1997, pp. 1029-1031.	
	I1	X. Dia, "Effects of image misregistraion on the accuracy of remotely sensed change detection," "IEEE Transactions of Geoscience and Remote Sensing, vol. 36, no. 5, pp.1566-1577, Sep. 1998.	
	J1	X. Dia, "Requirements and techniques for an automated change detection system," in "Proceedings of the 1998 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'98)," vol. 5, July 6-10 1998, pp. 2752-2754.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08B (04-03)
Approved for use through 04/30/2003. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 4 of 4

Complete if Known	
Application Number	10/759,023
Filing Date	01/20/2004
First Named Inventor	Clifton W. Bingham
Art Unit	2121
Examiner Name	
Attorney Docket Number	MR1735-62

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	K1	X. Dai, et al. "Automated image registration for change detection from Landsat thematic mapper imagery," in "Proeedings of the 1996 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'96)," vol. 3, May 27-31 1996, pp. 1609-1611.	
	L1	S. Gopal, et al. "Remote sensing of forest change using artificial neural networks," "IEEE Transactions of Geoscience and Remote Sensing," vol.34, no. 2, pp. 398-404, Mar. 1996.	
	M1	H. Hanaizumi, et al. "Change detection from remotely sensed multi-temporal images using multiple regression," in "Proceedings of the 1992 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'92)," May 26-29 1992, pp. 564-566.	
	N1	R. L. Lillestrand, "Techniques for change detection," "IEEE Transactions on Computers," vol. 21, no.7, pp. 654-659, July 1972.	
	O1	J. T. Morisette, et al. "An introduction of using generalized linear models to enhance satellite-based change detection," in "Proceedings of the 1997 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'97)," vol. 4, Singapore, Aug. 3-8 1997, pp. 1769-1771.	
	P1	I. Niemeyer, et al. "Unsupervised change detection techniques using multispectral satellite images," in "Proceedings of the 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'99), June 28 - July 2 1999, pp. 327-329.	
	Q1	V.K. Shettigara, "A generalized procedure for change detection and semi-automatic extraction of man-made objects from multispectral images," in "ISSSR-95." [Online]. Available: http;//ltpwww.gsfc.nasa.gov/ISSSR-95/ageneral.htm	
	R1	D. J. Wehdahl, "Change detection in SAR imges," in "Proceedings of the 1991 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'91)," June 3-6 1991, pp. 1421-1424.	
	S1	R. G. White, et al. "Change detection in SAR imagery," in "Proceedings of the 1990 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'90)," May 7-9 1990, pp. 217-222.	
	T1	T. Yamamoto, et al. "A change detection method for remotely sensed multi-spectral and multi-temporal images using 3-D segmentation," in "Proceedings of the 1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'99)," June 28 - July 2 1999, pp. 77-79.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.